

[0058] What is claimed:

1. A process of obtaining HFIP from a composition comprising an HFIP hydrolyzable precursor, comprising:
 - heating the composition with a strong protic acid to a temperature effective to hydrolyze at least some of the HFIP hydrolyzable precursor to HFIP;
 - and
 - isolating the HFIP from the heated composition.
2. A process for preparing sevoflurane, comprising:
 - (a) reacting an HFIP feed in one or more reactions that provide sevoflurane and an HFIP hydrolyzable precursor;
 - (b) separating the HFIP hydrolyzable precursor from the at least one of the one or more reactions of (a);
 - (c) heating the separated HFIP hydrolyzable precursor with a strong protic acid at a temperature effective to convert the HFIP hydrolyzable precursor to HFIP; and
 - (d) isolating the recovered HFIP.
3. The process of claim 2, further comprising:
 - (e) adding the recovered HFIP to the HFIP feed of (a).
4. The process of claim 2, wherein (c) and (d) are conducted simultaneously.
5. The process of claim 2, wherein the HFIP hydrolyzable precursor comprises one or more compounds selected from:
 - $(\text{CF}_3)_2\text{CHO}(\text{CH}_2\text{O})_n\text{CH}(\text{CF}_3)_2$;
 - $(\text{CF}_3)_2\text{CHO}(\text{CH}_2\text{O})_n\text{CH}_2\text{F}$;
 - $(\text{CF}_3)_2\text{CHO}(\text{CH}_2\text{O})_n\text{CH}_3$;
 - $(\text{CF}_3)_2\text{CHO}(\text{CH}_2\text{O})_{n-1}\text{CH}_2\text{Cl}$; and
 - $(\text{CF}_3)_2\text{CHOCHCl}_2$;where n is independently an integer from 1 to 10.

6. The process of claim 2, wherein (a) comprises treating the HFIP feed with formaldehyde and hydrogen fluoride to provide sevoflurane and the hydrolyzable HFIP precursor.
7. The process of claim 2, wherein (a) comprises treating the HFIP feed with bisfluoromethyl ether to provide sevoflurane and the hydrolyzable HFIP precursor.
8. The process of claim 2, wherein (a) comprises:
 - (1) treating hexafluoroisopropanol with a reactant selected from paraformaldehyde and 1,3,5-trioxane in the presence of a chlorinating agent to provide chlorosevo and the HFIP hydrolyzable precursor; and
 - (2) treating chlorosevo with a fluoride reagent to give sevoflurane.
9. The process of claim 2, wherein (a) comprises treating the HFIP feed with a methylating agent to give sevomethyl ether, chlorinating the sevomethyl ether to give chlorosevo and the HFIP hydrolyzable precursor, and treating chlorosevo with a fluoride reagent to give sevoflurane.
10. A process for preparing chlorosevo from HFIP, comprising:
 - (a) alkylating an HFIP feed to give sevomethyl ether;
 - (b) chlorinating sevomethyl ether to give a mixture comprising chlorosevo and other HFIP hydrolyzable precursors;
 - (c) isolating chlorosevo from the mixture to provide a chlorosevo-depleted mixture;
 - (d) heating the chlorosevo-depleted mixture with a strong protic acid at a temperature effective to convert the other HFIP hydrolyzable precursors to HFIP; and
 - (e) isolating recovered HFIP from the chlorosevo-depleted mixture.
11. The process of claim 10, further comprising:
 - (f) adding the recovered HFIP to the HFIP feed of (a), and repeating (a) through (e).

12. The process of claim 10, further comprising isolating sevomethyl ether from the mixture of (b) or the chlorosevo-depleted mixture of (c).
13. The process of claim 10, wherein the hydrolyzable precursors are selected from one or more of di-HFIP acetal and dichlorosevo.
14. The process of claim 13, wherein the strong protic acid is selected from the group consisting of sulfuric acid, benzenesulfonic acid, toluenesulfonic acid, methanesulfonic acid, hydrochloric acid, phosphoric acid and polyphosphoric acid.
15. The process of claim 14, wherein the strong protic acid is concentrated sulfuric acid.
16. The process of claim 15, wherein in (d), the chlorosevo-depleted mixture is heated with at least 10% by volume of concentrated sulfuric acid.
17. The process of claim 10, wherein the heating of (d) is conducted at atmospheric pressure.
18. The process of claim 17, wherein the temperature at which the chlorosevo-depleted mixture is heated with a strong protic acid is at least 60 °C.
19. The process of claim 10, wherein the isolation of chlorosevo in (c) comprises distillation of the mixture, and isolation of distilled chlorosevo.
20. The process of claim 10, wherein the isolation in (c) further comprises isolation of unreacted sevomethyl ether.
21. The process of claim 20, wherein the isolation comprises fractional distillation, and isolation of chlorosevo and unreacted sevomethyl ether in separate distillation fractions.

22. A serial or continuous process of producing chlorosevo by repeating (a) through (f) of claim 11.